Immunization Registry for the State of Missouri

HL7 Immunization
Implementation Guide (Abbreviated)
Release 1.0.4 – Published April 18, 2011

Modification to Previous Release (R1.0.3)		
R1.0.3 Page #	**Reference**	**Description**
General	References to ShowMeVax	Distinguish that the Missouri Immunization Registry is a database, and ShowMeVax is an application that uses the Missouri Immunization Registry. Most references to ShowMeVax were changed to Immunization Registry.
General	Timestamp (TS) data type	Clarified that the Immunization Registry does not require or provide precision greater than to the second.
3, 66	Update URL	Update URL to reference health.mo.gov.
4-5	Message Transmission (Web Service vs. HTTPS)	Revert to a single password to be used for both Active Directory authentication and database access.
8-9, 16, 24, 39-40, 55, 58	MSH-3, MSH-4, MSH-5, MSH-6	Clarify which components are used for sending and receiving application and facility
13	Acknowledgement Code	Removed references to Acknowledgement Code 'AE', as it is not used by the Immunization Registry

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Revision History

Ver/Rel #	Issue Date	Author	Summary of Changes
R1.0.3	February 24, 2011	Tom Rice and Tom Meeks	Revise implementation guide to accommodate https password requirements and modifications to specific field edit criteria.
R1.0.4	April 18, 2011	Tom Rice	Revise implementation guide to reflect reversion to a single https password, refer to Immunization Registry instead of ShowMeVax as appropriate, and make various clarifications.

PURPOSE

The purpose of this document is to provide both internal State developers and third-parties guidelines for developing interfaces between the Missouri Immunization Registry (Immunization Registry) and healthcare providers. These interfaces provide the ability to share immunization records between these parties. The major sections of this document include:

- Introduction
- Design and Development Factors
- Provider Implementation and Validation
- HL7 Message Definitions
- Message Processing Design
- Appendices

INTRODUCTION

The Immunization Registry supports the Centers for Disease Control's National Immunization Program (NIP) goal to use HL7 for immunization data in a manner as uniformly as possible. Therefore, these Immunization Registry specifications are based on the CDC's *Implementation Guide for Immunization Data Transactions using Version 2.3.1 of the Health Level Seven (HL7) Standard Protocol*, published as version 2.2 in June 2006, available online at:

http://www.cdc.gov/vaccines/programs/iis/stds/downloads/hl7guide.pdf

As a result, specifications not provided in this document (i.e., the HL7 Immunization Implementation Guide (Abbreviated)), such as data attributes or whether a data element repeats, default to the standards set forth in the above CDC document.

Additional information regarding HL7 is available online at: http://www.hl7.org.

DESIGN AND DEVELOPMENT FACTORS

Real-time Request for Vaccination Records

A primary advantage of the Immunization Registry is the ability for providers to review the aggregate vaccination history of a person. It is common for a person to receive immunizations from multiple providers. The Immunization Registry allows a provider to identify vaccinations a person has received from any provider who has submitted immunization records to the Immunization Registry. As a result, when a patient appears at a provider's office for a vaccination, via the provider's computer system, a request can be made to retrieve the vaccination history for that person from the Immunization Registry.

Provider Process of Returned VXX Messages.

After receiving a VXX message, provider's computer system will likely issue a follow-up or second VXQ that refines the information included in the initial registry query.

Update a Patient's Vaccination Record in the Immunization Registry

For the Immunization Registry to make patient immunization history available to all providers, providers who physically administer vaccinations must submit a record of those vaccinations to the Immunization Registry in a timely fashion. Providers will submit immunization records to the Immunization Registry in either real-time or bulk mode. The

Immunization Registry will then validate each immunization record, checking the quality of the data received, and eliminating duplicate records. Immunization records will be consolidated with existing Immunization Registry records improving the vaccination history for the corresponding person.

Multiple Matches

Provider systems for processing VXX messages should incorporate a mechanism for selecting one of the individuals in the VXX list, and subsequently, issuing a new VXQ.

Adverse Reaction Messages

Excluded from the Immunization Registry Provider Interface Module at this time.

Inventory Messages

Excluded from the Immunization Registry Provider Interface Module at this time.

HL7 Message Format

The HL7 interfaces defined for the Immunization Registry are based on Version 2.3.1 of the HL7 standard protocol published by the CDC (see Appendix B - References). Any deviations from standard CDC values have been documented within the relevant field definitions. The HL7 Messages section of this document defines which HL7 messages are incorporated in the Immunization Registry Provider Interface Module design. Significant deviations from the message definitions that prevent the Immunization Registry from being successful will cause processing of the message to cease without returning a message.

Secure Message Transmittal

Providers will have two options for transmitting HL7 messages to/from the Immunization Registry: Web Service or HTTP POST messages. To help make data transmissions secure, messages will be sent via the HTTPS protocol. Each real-time HL7 message must include a valid username and password to authenticate a provider's right to access the Immunization Registry.

Technical Requirements

The technical requirements associated with the HL7 Immunization Provider Interface Module are provided below.

- **Message Formatting**. HL7 (Health Level Seven) communications protocol will be used for both real-time and bulk interfaces, and are based on Version 2.3.1 of the HL7 standard protocol. A definition of each HL7 message is contained in section HL7 Message Definitions
- **Real-time Messages**. All real-time HL7 messages will be transmitted to the Immunization Registry by using either SOAP or POST protocols via HTTPS. Users will provide a valid username and password to gain access to the Immunization Registry. Real-time messages will be processed directly by the Immunization Registry (via Rhapsody), eliminating the need to place the messages in a separate secured file.
- **Update Messages** (VXUs can be transmitted in bulk or as single messages). VXU update messages can be transmitted as follows:
  - **Same as Real-time Messaging**. Providers who transmit real-time messages (VXQs) will submit update messages (VXUs) using the same protocol (e.g., HTTPS POST or SOAP).
  - **Providers Who Transmit Updates Only**. Providers who only transmit update messages (VXUs) may do so in one of the following manners:
    - **Single Update Messages**. Providers, who choose to submit update messages (VXUs) one at a time, will transmit those using SOAP or POST protocols via HTTPS. The Immunization Registry will generate a General Acknowledgement (ACK) message for each VXU message indicating that the message was received. This ACK does not represent or imply that the VXU was successfully applied to the Immunization Registry, only that the message was received.
    - **Batched Update Messages.** Providers who transmit update messages (VXUs) as a batch will do so using SFTP. These messages will be placed in a secured file transfer protocol directory (SFTP). Batched VXUs must be accompanied by the appropriate batch header and footer segments. ACKs are NOT generated by this process.

Notice

The HL7 messaging protocols deployed by the Immunization Registry do not include the use of TCP/IP or VPN.

Message Transmission (Web Service vs. HTTPS)

Web Service

HTTPS can be used to connect to the SOAP Registry web service. The following is a sample SOAP request and response. The placeholders shown would be replaced with actual values.

```
POST /hl7services/HL7WS.asmx HTTP/1.1
Host: http://xxxxxxx.health.mo.gov/webservices/immunization/hl7services
Content-Type: text/xml; charset=utf-8
Content-Length: length
```

```
SOAPAction: http://tempuri.org/Request or Post Information from the
Immunization Registry
<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance" xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
<soap:Body>

<Request_x0020_or_x0020_Post_x0020_Information_x0020_from_x0020_
the_x0020_Immunization_x0020_Registry xmlns="http://tempuri.org/">
<USERID>string</USERID>
<PASSWORD>string</PASSWORD>
<FACILITYID>string</FACILITYID>
<MESSAGEDATA>base64Binary</MESSAGEDATA>
</Request_x0020_or_x0020_Post_x0020_Information_x0020_from_x0020
_the_x0020_Immunization_x0020_Registry>
</soap:Body>

</soap:Envelope>
```

HTTP POST Messages

HTTP POST via HTTPS can be used to access the Immunization Registry where provider messages will contain the following fields:

FIELD NAME	DATA TYPE	NOTES
UserID	String	• The authentication web service expects this to be exactly 8 characters in length. • DHSS will assign each provider a unique user ID. • If an invalid user ID is given, the authentication web service will not pass the Message field to the Immunization Registry. Processing of the message will cease without returning a message.
Password	String	• This is the password for Active Directory authentication and for accessing the Immunization Registry. • **DHSS will assign each provider a unique password** for their user ID. • If an invalid password is transmitted by the provider, the authentication web service will not pass the Message field to the Immunization Registry. Processing of the provider submitted message will cease **without** the Immunization Registry returning a message.
Facility Id	String	• The authentication web service expects this to be exactly 9 characters in length. • DHSS will assign each provider a unique Facility Id. • If an invalid Facility Id is transmitted, the authentication web service will not pass the Message field to the Immunization Registry. Processing of the provider submitted message will cease **without** the Immunization Registry returning a message.
Message	String	• The HL7 message being sent to the Immunization Registry.

PROVIDER IMPLEMENTATION AND VALIDATION

Each ***provider*** who seeks to establish interfaces with the Immunization Registry must be validated prior to processing HL7 messages. See the HL7 Immunization Message Validation document referenced in Appendix B for the steps required to achieve this validation.

HL7 MESSAGE DEFINITIONS

The following pages define the HL7 messages included in the Immunization Registry Provider Interface Module.

Delimiters

The Immunization Registry expects and will use the CDC recommended delimiters for all messages. These include:

DELIMITER		
Character	**Description**	**MEANING**
<CR>	Carriage Return	Segment Terminator
|	Pipe	Field Separator
^	Carat	Component Separator
&	Ampersand	Sub-Component Separator
~	Tilde	Repetition Separator
\	Back Slash	Escape Character

Exhibit 1: HL7 Delimiters

Implemented Message Types

The Immunization Registry will accept the message types and corresponding event types as defined in Exhibit 2. A message of any other type will be dropped and a return message will not be generated.

MESSAGE TYPES ACCEPTED BY REGISTRY	SUPPORTED EVENT TYPES (BY MESSAGE TYPE)
VXQ	V01
VXU	V04

Exhibit 2: Message Types

Similarly, the Immunization Registry will send the message types and corresponding event types as defined in Exhibit 3. At the current time, the Immunization Registry will only send these messages in response to a message received from a provider's system. It will not be initiating an exchange of data.

MESSAGE TYPES SENT BY REGISTRY	SUPPORTED EVENT TYPES (BY MESSAGE TYPE)
ACK	
QCK	
VXX	V02
VXR	V03

Exhibit 3: Message Types with Event Types

Basic Message Construction Rules

Encoding Rules for Sending

- Encode each segment in the order specified in the abstract message format.
- Use HL7 recommended encoding characters ("^~\&").
- Begin each segment with the 3-letter segment ID (for example "RXA").
- Precede each data field with the field separator ("|").
- Encode the data fields in the order given in the corresponding segment definition table.
- Encode each data field according to its HL7 data type format.
- End each segment with the segment terminator (carriage return character, ASCII hex 0D).
- Components, subcomponents, or repetitions that are not valued at the end of a field need not be represented by component separators. The data fields below, for example, are equivalent:

^XXX&YYY&&^ is equal to ^XXX&YYY^
|ABC^DEF^^| is equal to |ABC^DEF|
Also,
NK1|1|DOE^MARY|MTH^Mother^HL70063 is equal to
NK1|1|DOE^MARY|MTH^Mother^HL70063||||||||||

Encoding Rules for Receiving

- If a data segment that is expected is not included, treat it as if none of the data fields within were present.
- If a data segment is included that is not expected, ignore it; this is not an error.
- If data fields are found at the end of a data segment that are not expected, ignore them; this is not an error.

Message Formats

Within the following format definitions the "RQ'D" field indicates whether the corresponding field is required. The following conventions apply:

- MO RQ'D:
  - R: Required by the Immunization Registry
    RE: Required by the Immunization Registry if available - provider system is to include the field if it is available within the provider's database
- CDC RQ'D:
  - R: Required by CDC
  - RE: Required by CDC if available - provider system is to include the field if it is available within the provider's database

Note: All CDC RQ'D fields are also required by the Immunization Registry, and there are fields that are optional according to CDC but are required by the Immunization Registry, documented in the following tables for each message type.

- **Field is Blank**: Not Required/Not Used
- **Repeats**: Indicates whether the field repeats
- **Table:** Indicates the CDC table that contains valid values for the field
- **Item**: Number that is unique for this field across all segments
- **Len:** Length of given field
- **DT:** Data Type (see Appendix D for the list of Data Types)

VXQ - Query for Vaccination Record

The VXQ message is used by a provider to submit a request for a person's vaccination record. As mentioned previously, the message should be formatted as specified in the referenced documentation. Exhibit 5 contains notes for various fields as they pertain to the Immunization Registry.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
MSH Segment									
Field Separator	1	R	R			00001	1	ST	• The Immunization Registry requires the pipe character ("|") as the field separator for all HL7 messages.
Encoding Characters	2	R	R			00002	4	ST	• The Immunization Registry requires a value of "^~\&" in this field.
Sending Application	3	R				00003	180	HD	• This field (component 1) identifies the sending application among all other applications within the sender's network enterprise. The network enterprise consists of all the applications that participate in the exchange of HL7 messages within the enterprise. Immunization providers may use this field to identify their software name and version.
Sending Facility	4	R				00004	180	HD	• This field uses a name, identifier, and identifier type to identify the facility where the data contained in this individual message originated (i.e., the "owner" of the message information). • The required identifier is a provider ID (component 2) issued by the Missouri Department of Health and Senior Services using "MOCLIENTID" as the identifier type (component 3). • **The provider is to contact DHSS - Bureau of Immunization Assessment and Assurance (BIAA) to obtain their assigned facility identifiers**.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									• **Important –** a different Sending Facility identifier must be transmitted for each sub-organization for which the provider wishes to uniquely identify or segregate immunizations. • The Immunization Registry will include the ID provided here in the "Receiving Facility" field of the MSH segment of the response message. • If an invalid ID is included, the Immunization Registry will not process the message.
Receiving Application	5	R				00005	180	HD	• This field (component 1) uniquely identifies the receiving application among all other applications within the receiver's network enterprise. "SHOWMEVAX" is to be used for immunizations updates being sent to the State of Missouri Immunization Registry.
Receiving Facility	6	R				00006	180	HD	• This field (component 1) identifies the receiving facility. "MODHSS" is to be used for immunization updates being sent to the State of Missouri immunization registry.
Date/Time of Message	7	R				00007	26	TS	• Date/time the sending system created the message. The typical HL7 Time stamp (TS) data type is defined to be in the format: YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision> **<u>The Immunization Registry requires precision only to the second.</u>**

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Message Type	9	R	R		0076 0003	00009	7	CM	• The Immunization Registry expects this to always be "VXQ^V01" for this type of message.
Message Control ID	10	R	R			00010	20	ST	• This field uniquely identifies the message to the provider. The Immunization Registry **does NOT dictate the format** of this field, only requiring that it is unique within the provider's system. The receiving system echoes this ID back to the sending system in the message acknowledgment segment (MSA). Many facilities simply use a Date/Time stamp plus a sequentially assigned number. For example: A provider could use the format of "YYYYMMDDMO999999" for this field. The value can be interpreted as: – YYYYMMDD = current system date when query was executed – MO = 2 character abbreviation for Missouri – 999999 = sequential number indicating the number of HL7 messages sent to the Immunization Registry on the indicated date.
Processing ID	11	R	R			00011	3	PT	• The Immunization Registry will use this value to indicate which of its technical environments (e.g., Test, Validation or Production) to use to process the inbound HL7 message. Valid values are represented in table "HL70103". In addition, Missouri includes "V" to represent its provider validation

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									environment.
Version ID	12	R	R		HL7-0104	0012	60	VID	• "2.3.1"
QRD Segment									
Query Date/Time	1	R	R			0025	26	TS	• The date and time the query was generated by the sending application.
Query Format Code	2	R	R		0106	00026	1	ID	• The Immunization Registry will only accept the record-oriented-format (i.e., a value of "R") in this field. • The Immunization Registry will ignore any other value in this field.
Query Priority	3	R	R			00027	1	ID	• This is the timeframe (duration) in which the sending system (provider system) expects a response. The Immunization Registry times out and terminates processing of the VXQ after 60 seconds from the time of receipt of the message. The Immunization Registry ignores any value sent in this field.
Query ID	4	R	R			00028	10	ST	• A unique value to the system sending the message. • The Immunization Registry will return the ID provided here in the "Query ID" field of the QRD segment of the corresponding VXX or VXR response message.
Quantity Limited Request	7	R	R		0126	00031	10	CQ	• The Immunization Registry will return up to 10 (ten) patient records within a resulting VXX message or the value indicated by the provider in this field,

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									whichever is less.
Who Subject filter	8	R	R	Y		0032	60	XCN	• The Immunization Registry will only process the following items in this field: – First Name – Middle Name – Last Name – Identifier – Identifier Type - valid values are: ▪ SR: State Registry ID ▪ PI: Patient Internal Identifier ▪ All other IDs with other ID-Types will be ignored. ▪ Message can include either just SR or PI or both. • The Immunization Registry will ignore all other components of this field as they will have no impact on search results.
What Subject Filter	9	R	R	Y	0048	00033	60	CE	• The Immunization Registry will ignore any value in this field.
What Department Data Code	10	R	R		0108	00034	60	CE	• The Immunization Registry will ignore any value in this field.
QRF Segment									
Where Subject Filter	1	R	R			00037	20	ST	• This field is to always contain: "MO0000". Any other value in this field will cause the Immunization Registry to ignore the request.
Other Query Subject Filter	5	R				00041	60	ST	• ***The Immunization Registry locally defines search keys as defined in Exhibit 5.1 immediately below this exhibit. Although, HL7 permits this***

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									to be a repeated entity, the Immunization Registry will only process the first occurrence if multiples are supplied by the provider.

Exhibit 5: Reference Information for VXQ Message

The following relates to Field 5 in Exhibit 5 immediately above.

Pos	*Component*	*Data Type*	*Description / Examples*
1	Patient Social Security Number	String	This field must include 9 digits after the system removes all non-numeric characters such as dash (-), forward slash (/), spaces, etc. If 9 digits are not found, the system will ignore the value in this field. It will try to continue processing the message. Example: 123456789
2	Patient Birth Date	Date	YYYYMMDD If a valid date is not found, the system will ignore the value in this field. It will try to continue processing the message. Example: July 4, 1976 = 19760704
3	Patient Birth State	ID (code value from HL7 table)	Use 2-letter postal code. If a valid state code is not found, the system will ignore the value in this field. It will try to continue processing the message.
4	Patient Medicare Number	String	When applicable
5	Patient Medicaid Number	String	This is the State's DCN identifier and is to be provided for all patients when available, including non-Medicaid patients. All Missouri newborns are given a DCN.
6	Mother's Name	Extended Personal Name	<family name> ^<given name>^<middle name or initial>^<suffix>^<prefix>^<degree>
7	Mother's Maiden Name	String	Family name of mother before marriage

8	Mother's SSN	String	Not used by the Immunization Registry
9	Father's Name	Extended Personal Name	<family name> ^<given name>^<middle name or initial>^<suffix>^<prefix>^<degree>
10	Father's SSN	String	Not used by the Immunization Registry

Exhibit 5.1: Other Query Subject Filter

Preliminary Design. Based on the identifying information provided, the Immunization Registry will attempt to locate any and all matching patient records using the guidelines below. (The description below is not intended to imply anything regarding the technical design of the queries used to locate matching records. The goal is only to describe the general concept of how the searches will work.)

1. The Immunization Registry will look for a single record where there is an exact match by separately applying the following search criteria. If a single record is found by any of these searches, move on to Step 2. Otherwise, move on to the next search in Step 1. If all Step 1 searches have been exhausted, go to Step 4.

   a. The Patient State Registry ID supplied (if any) matches the Patient State Registry ID in the Immunization Registry.
   b. The combination of the Provider's Patient ID and Provider ID supplied (if any) matches that combination of fields in the Immunization Registry.
   c. The DCN (Medicaid Number) supplied (if any) matches the DCN in the Immunization Registry.
   d. The SSN supplied (if any) matches the patient's SSN in the Immunization Registry.

2. If any of the searches in Step 1 resulted in a single match, then a secondary match is performed to validate the match. The secondary match will be satisfied if the inbound record and the Immunization Registry match on at least two of the following:

   - Patient/client Birth Year and Birth Month
   - Soundex on Mother's Maiden Name
   - Soundex of Client's First Name and Client's Last Name
   - SSN, DCN, Local Patient Identifier (Provider's Patient ID)– other than the one successfully matched in a Step 1 search

   If the secondary match is satisfied, go to Step 3. If the secondary match is not satisfied, return to the next search in Step 1. However, if all Step 1 searches have been exhausted, go to Step 4.

3. A single result is returned via a VXR message. Processing terminates.

4. Perform a Name and DOB search with the following requirements:
    - First and Last name supplied match the patient's name, the patient's alias name, or the patient's birth record name in the Immunization Registry.
    - The Date of Birth supplied matches the patient's DOB in the Immunization Registry.

    If this search identifies a single matching record, go to step 3. If zero or more than ten matches are found, go to Step 5. Otherwise, go to Step 6.

5. Perform a relaxed search intended to identify a list of potential matches. Apply the following filters consecutively, narrowing the search results until only two to ten records are returned.
    - Soundex on Client's First and Last Names
    - Client's Birth Year
    - Client's Birth Month
    - Soundex on Mother's Maiden Name

    If, after the application of any of these filters, the search returns only two to ten records, go to Step 6. If this process results in fewer than two or more than ten records being selected, go to Step 7.

6. Multiple (two to ten) records are returned via a VXX message. Processing terminates.

7. Notice is given via a QCK message that no matching records are found. Processing terminates.

For any search, if there is a matching record that is marked for deletion in the Immunization Registry, it will not be returned as part of the search results. The Immunization Registry will always respond with the appropriate message type as follows:

- If no matching records (or more than ten) are found, a QCK message will be returned.
- If a single matching record is found, a VXR message will be returned.
- If multiple (two to ten) matching records are found, a VXX message will be returned.

NOTE: The above description is not intended to imply anything regarding the technical design of the queries used to locate matching records in the Immunization Registry. The goal is only to describe the general concept of how the searches will work.

VXX - Response to Vaccination Query Returning Multiple PID Matches

The VXX message is used in response to a VXQ message whenever there are multiple patient records in the Immunization Registry that match the query. As mentioned previously, the message should be formatted as specified in the referenced documentation. Exhibit 6 contains notes for various fields as they pertain to the Immunization Registry.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
MSH Segment									
Field Separator	1	R	R			00001	1	ST	• The Immunization Registry will always use the pipe character ("|") as the field separator for all HL7 messages.
Encoding Characters	2	R	R			00002	4	ST	• The Immunization Registry will always put a value of "^~\&" in this field.
Sending Application	3	R				00003	180	HD	• This field identifies the sending application among all other applications within the sender's network enterprise. The network enterprise consists of all the applications that participate in the exchange of HL7 messages within the enterprise. Immunization providers may use this field to identify their software name and version. • "SHOWMEVAX" will be used in component 1 for immunization responses being sent from the State of Missouri Immunization Registry.
Sending Facility	4	R				00004	180	HD	• This field uses a name, identifier, and identifier type to identify the facility where the data contained in this individual message originated (i.e., the "owner" of the message information). • "MODHSS" will be used in component 1 for immunization responses being sent from the State of Missouri immunization registry.
Receiving Application	5	R				00005	180	HD	• This is the same value that was in the Sending Application on the corresponding VXQ.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Receiving Facility	6	R				00006	180	HD	• This is the same value that was in the Sending Facility on the corresponding VXQ.
Date/Time of Message	7	R				00007	26	TS	• Date/time the sending system created the message. The typical HL7 Time stamp (TS) data type is defined to be in the format: YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision> **<u>The Immunization Registry will provide precision only to the second.</u>**
Message Type	9	R	R		0076 0003	00009	7	CM	• The Immunization Registry expects this to always be "VXX^V02" for this type of message.
Message Control ID	10	R	R			00010	20	ST	• This field contains a value that uniquely identifies the message to the Immunization Registry.
Processing ID	11	R	R			00011	3	PT	• Used to indicate how to process the message as defined in HL7 processing rules. See Table 0103 for valid values.
Version ID	12	R	R		0104	0012	60	VID	• Matched by the receiving system to its own HL7 version to be sure the message will be interpreted correctly. Use a value of "2.3.1" to indicate HL7 Version 2.3.1.
MSA Segment									
Acknowledgment Code	1	R	R		0008	00018	2	ID	• The Immunization Registry will always respond using the original acknowledgement mode. • The Immunization Registry will only respond with a VXX message when the message was processed without error and two to ten matching records were found. Therefore, the only value that will be used here is "AA".

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Message Control ID	2	R	R			00010	20	ST	• The Immunization Registry will always put the value of the "Message Control ID" field in the MSH segment of the corresponding VXQ message in this field.
***QRD Segment** (this is a copy of the QRD segment from the corresponding VXQ)*									
Query Date/Time	1	R	R			0025	26	TS	• The date and time the query was generated by the sending application.
Query Format Code	2	R	R		0106	00026	1	ID	• The Immunization Registry will only accept the record-oriented-format (i.e., a value of "R") in this field. • The Immunization Registry will ignore any other value in this field.
Query Priority	3	R	R			00027	1	ID	• This is the timeframe (duration) in which the sending system (provider system) expects a response. The Immunization Registry times out and terminates processing of the VXQ after 60 seconds from the time of receipt of the message. The Immunization Registry ignores any value sent in this field.
Query ID	4	R	R			00028	10	ST	• A unique value to the system sending the message. • The Immunization Registry will always put the value of the "Query ID" field in the QRD segment of the corresponding VXQ message in this field.
Quantity Limited Request	7	R	R		0126	00031	10	CQ	• The Immunization Registry will return up to 10 patient records within a resulting VXX message or the value indicated by the provider in this field, <u>whichever is less</u>.
Who Subject filter	8	R	R	Y		0032	60	XCN	• The Immunization Registry will only process the following items in this field: – First Name

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									– Middle Name – Last Name – Identifier – Identifier Type - valid values are: ▪ SR: State Registry ID ▪ PI: Patient Internal Identifier ▪ All other IDs with other ID-Types will be ignored. ▪ Message can include either just SR or PI or both. • The Immunization Registry will ignore all other components of this field as they will have no impact on search results.
What Subject Filter	9	R	R	Y	0048	00033	60	CE	• The Immunization Registry will ignore any value in this field.
What Department Data Code	10	R	R		0108	00034	60	CE	• The Immunization Registry will ignore any value in this field.
QRF Segment ***(this is a copy of the QRF segment from the corresponding VXQ)***									
Where Subject Filter	1	R	R			00037	20	ST	• This field is to always contain: "MO0000". Any other value in this field will cause the Immunization Registry to ignore the request.
Other Query Subject Filter	5	R				00041	60	ST	• ***The Immunization Registry locally defines search keys as defined in Exhibit 5.1. Although, HL7 permits this to be a repeated entity, the Immunization Registry will only process the first occurrence if multiples are supplied by the provider.***
PID Segment									
Patient Identifier List	3	R	R	Y	0203	00106	20	CX	• Contains one or more identifiers used to uniquely identify the patient (e.g. medical record number, patient identifier, Medicaid number, SSN, etc.). Sub-components 1 (ID)

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									and 5 (identifier type code) are required in the PID-3 field. The Immunization Registry will only process the following field identifier types: o MA (Medicaid number) o SR (State Registry (Missouri) ID) o SS (Social Security Number) o PI (provider's internal system ID) • All other identifier types in this field will be ignored. • This field can be repeated.
Patient Name	5	R	R	Y		00108	48	XPN	• This field contains the legal name of the patient. See the XPN data type. The patient's last and first names will be placed in the first two components, respectively. If the name type code component is included, it will be valued "L" for Legal (see Table 0200). • The Immunization Registry does not support repetition of this field.
Mother's Maiden Name	6	RE		Y		00109	48	XPN	• Contains the family name under which the mother was born (i.e., before marriage). See the XPN data type. If the name type code component is included, will be set to "M" for Maiden Name (see Table 0200). The Immunization Registry will only use the family name component from this field, extracting the mother's first name from the NK1 segment. • The Immunization Registry does not support repetition of this field.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Date of Birth	7	R				00110	26	TS	• This field contains the patient's year, month and day of birth in the format YYYYMMDD. The Immunization Registry does not include the time component.
Sex	8	R			0001	00111	1	IS	• Use 'F', 'M' or 'U'
Patient Alias	9	RE					48	XPN	• The Name Type component will be "A" if any value is entered in this field. • The Immunization Registry will not provide any value associated with other name type. • NOTE: Name values will be parsed by the Immunization Registry to ensure a standardized format prior to searching for or updating a record. This may result in slight variations of names submitted versus names returned.
Patient Race	10	RE		Y	0005	00113	80	CE	• Contains a code indicating the patient's race (see Table 0005). If it is necessary to further define the patient's ancestry as Hispanic, use field PID-22-Ethnicity Group. This field can be repeated, representing that the patient's immunization record indicates multiple races.
Patient Address	11	RE		Y	0190	00114	106	XAD	• The Immunization Registry will provide addresses of one of the following address types: "H" (Home), "P" (Permanent), "M" (Mailing), or "BR" (Birth Residence) (see Table 0190). In general, the Immunization Registry will only return the address it considers primary. However, if birth residence information (Birth State, Birth County, Birth Country) is present in the Immunization Registry, a BR address type will additionally be provided in this repeating

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									field.
Patient Number - Home	13	RE		Y		00116	40	XTN	• This field contains the patient's phone numbers, and, possibly, e-mail address. The Immunization Registry recognizes telecommunication use codes in component 2 (see Table 0201), but ignores use codes other than "PRN", "WPN", and "NET". If "PRN" or "WPN" is specified, the Immunization Registry will use the first component, giving a 10-digit number for the area code and phone number combined. • If component 2 is "NET", the e-mail address will be provided in component 4. • The Immunization Registry supports repetition of this field.
Ethnic Group	22	RE		Y	0189	00125	80	CE	• This field can be used to further define the patient's ancestry as Hispanic (see Table 0189). • The Immunization Registry does not support repetition of this field.
Multiple Birth Indicator	24	RE			0136	00127	1	ID	• This field indicates whether the patient was part of a multiple birth (see Table 0136). "Y" indicates that the patient was part of a multiple birth; otherwise this field will be omitted.
Birth Order	25	RE				00128	2	NM	• This field is relevant when client was born in a multiple birth. Use 1 for the first born, 2 for the second, etc. This field is useful in matching client data to existing records.
NK1 Segment									
Set ID - NK1	1	R	R			00190	4	SI	• This field contains a number that identifies the occurrence of this NK1 segment within its association with the PID segment. Using the NK1-1 Set ID, multiple NK1 segments can be associated with one PID segment. "1"

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									represents the first occurrence of the Set ID for the first occurrence. The Immunization Registry will only process the first occurrence.
Name	2	R		Y		00191	48	XPN	• This field contains the name of the next-of-kin or associated party. The Immunization Registry does not support repetition of this field. • **Note: The mother's maiden name should be reported in PID-6..**
Relationship	3	R			0063	00192	60	CE	• This field defines the relationship between the patient and the name of the next of kin or associated party (see Table 0063). The Immunization Registry uses only the first three components of the CE data type, for example: |MTH^Mother^HL70063|. The Immunization Registry does not support repetition of this field.
Address	4	RE		Y		00193	106	XAD	• See the XAD data type. • The Immunization Registry does not support repetition of this field.
Phone Number	5	RE		Y		00194	40	XTN	• Same processing rules as Patient Number – Home (PID-13).
Date of Birth	16	RE				00110	26	TS	• Next of kin's date of birth. The Immunization Registry does not include the time component.
Next-of- Kin/Associated Party's Identifiers	33	RE		Y		00751	32	CX	• This field contains identifiers for the next-of-kin/associated party. The Immunization Registry only supports SSN and Medicaid number (Same as Missouri's DCN).

Exhibit 6: Reference Information for VXX Message

VXR - Response to Vaccination Query Returning the Vaccination Record (VXR)

The VXR message is used in response to a VXQ message whenever the Immunization Registry has uniquely identified a single patient matching the criteria contained in the associated query. As mentioned previously, the message should be formatted as specified in the referenced documentation. Exhibit 7 contains notes for various fields as they pertain to the Immunization Registry.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
MSH Segment									
Field Separator	1	R	R			00001	1	ST	• The Immunization Registry will always use the pipe character ("|") as the field separator for all HL7 messages.
Encoding Characters	2	R	R			00002	4	ST	• The Immunization Registry will always put a value of "^~\&" in this field.
Sending Application	3	RE				00003	180	HD	• This field identifies the sending application among all other applications within the sender's network enterprise. The network enterprise consists of all the applications that participate in the exchange of HL7 messages within the enterprise. Immunization providers may use this field to identify their software name and version. • "SHOWMEVAX" will be used in component 1 for immunization responses being sent from the State of Missouri immunization registry.
Sending Facility	4	R				00004	180	HD	• This field uses a name, identifier, and identifier type to identify the facility where the data contained in this individual message originated (i.e., the "owner" of the message information). • "MODHSS" will be used in component 1 for immunization responses being sent from the State of Missouri immunization registry.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Receiving Application	5	R				00005	180	HD	• This is the same value that was in the Sending Application on the corresponding VXQ.
Receiving Facility	6	R				00006	180	HD	• This is the same value that was in the Sending Facility on the corresponding VXQ.
Date/Time of Message	7	R				00007	26	TS	• Date/time the sending system created the message. The typical HL7 Time stamp (TS) data type is defined to be in the format: YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision> **<u>The Immunization Registry will provide precision only to the second.</u>**
Message Type	9	R	R		0076 0003	00009	7	CM	• "VXR^V03"
Message Control ID	10	R	R			00010	20	ST	• This field uniquely identifies the message to the Immunization Registry.
Processing ID	11	R	R			00011	3	PT	• The Immunization Registry will use this value to indicate which of its technical environments (e.g., Test, Validation or Production) to use to process the inbound HL7 message. Valid values are represented in table "HL70103". In addition, Missouri includes "V" to represent its provider validation environment.
Version ID	12	R	R		HL7-0104	0012	60	VID	• "2.3.1"

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
MSA Segment									
Acknowledgment Code	1	R	R		0008	00018	2	ID	• The Immunization Registry will always respond using the original acknowledgement mode. • The Immunization Registry will only respond with a VXR message when the message was processed without error and a single matching record was found. Therefore, the only value that will be used here is "AA".
Message Control ID	2	R	R			00010	20	ST	• The Immunization Registry will always put the value of the "Message Control ID" field in the MSH segment of the corresponding VXQ message in this field.
QRD Segment *(this is a copy of the QRD segment from the corresponding VXQ)*									
Query Date/Time	1	R	R			0025	26	TS	• The date and time the query was generated by the sending application.
Query Format Code	2	R	R		0106	00026	1	ID	• The Immunization Registry will only accept the record-oriented-format (i.e., a value of "R") in this field. • The Immunization Registry will ignore any other value in this field.
Query Priority	3	R	R			00027	1	ID	• This is the timeframe (duration) in which the sending system (provider system) expects a response. The Immunization Registry times out and terminates processing of the VXQ after 60 seconds from the time of receipt of the message. The Immunization Registry ignores any value sent in this field.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Query ID	4	R	R			00028	10	ST	• A unique value to the system sending the message. • The Immunization Registry will always put the value of the "Query ID" field in the QRD segment of the corresponding VXQ message in this field.
Quantity Limited Request	7	R	R		0126	00031	10	CQ	• The Immunization Registry will return up to 10 patient records within a resulting VXX message or the value indicated by the provider in this field, whichever is less.
Who Subject filter	8	R	R	Y		0032	60	XCN	• The Immunization Registry will only process the following items in this field: – First Name – Middle Name – Last Name – Identifier – Identifier Type - valid values are: ▪ SR: State Registry ID ▪ PI: Patient Internal Identifier ▪ All other IDs with other ID-Types will be ignored. ▪ Message can include either just SR or PI or both. • The Immunization Registry will ignore all other components of this field as they will have no impact on search results.
What Subject Filter	9	R	R	Y	0048	00033	60	CE	• The Immunization Registry will ignore any value in this field.
What Department Data Code	10	R	R		0108	00034	60	CE	• The Immunization Registry will ignore any value in this field.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
QRF Segment ***(this is a copy of the QRF segment from the corresponding VXQ)***									
Where Subject Filter	1	R	R			00037	20	ST	• This field is to always contain: "MO0000". Any other value in this field will cause the Immunization Registry to ignore the request.
Other Query Subject Filter	5	R				00041	60	ST	• ***The Immunization Registry locally defines search keys as defined in Exhibit 5.1. Although, HL7 permits this to be a repeated entity, the Immunization Registry will only process the first occurrence if multiples are supplied by the provider.***
PID Segment									
Patient Identifier List	3	R	R	Y	0203 (ID Types)	00106	20	CX	• Contains one or more identifiers used to uniquely identify the patient (e.g. medical record number, patient identifier, Medicaid number, SSN, etc.). Sub-components 1 (ID) and 5 (identifier type code) are required in the PID-3 field. The Immunization Registry will only process the following field identifier types: o MA (Medicaid number) o SR (State Registry (Missouri) ID) o SS (Social Security Number) o PI (provider's internal system ID) • All other identifier types in this field will be ignored. • This field can be repeated.
Patient Name	5	R	R	Y		00108	48	XPN	• This field contains the legal name of the patient. See the XPN data type. The

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									patient's last and first names are provided in the first two components, respectively. When the name type code component is included, it will have a value of "L" for Legal (see Table 0200).
Mother's Maiden Name	6	RE		Y		00109	48	XPN	• Contains the family name under which the mother was born (i.e., before marriage). See the XPN data type. If the name type code component is included, it will have a value of "M" for Maiden Name (see Table 0200). The Immunization Registry will only use the family name component from this field, extracting the mother's first name from the NK1 segment. • The Immunization Registry does not support repetition of this field.
Date of Birth	7	R				00110	26	TS	• This field contains the patient's year, month and day of birth in the format YYYYMMDD. The Immunization Registry does not include the time component.
Sex	8	R			0001	00111	1	IS	• Will contain 'F', 'M', or 'U'
Patient Alias	9	RE					48	XPN	• The Name Type component will be "A" if any value is entered in this field. • The Immunization Registry will not provide any value associated with other name type. • NOTE: Name values will be parsed by the Immunization Registry to ensure a standardized format prior to searching for or updating a record. This may result

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									in slight variations of names submitted versus names returned.
Patient Race	10	RE		Y	0005	00113	80	CE	• Contains a code indicating the patient's race (see Table 0005). If it is necessary to further define the patient's ancestry as Hispanic, use field PID-22-Ethnicity Group. This field can be repeated, represent that the patient's immunization record indicates multiple races.
Patient Address	11	RE		Y	0190	00114	106	XAD	• The Immunization Registry will provide addresses of one of the following address types: "H" (Home), "P" (Permanent), "M" (Mailing), or "BR" (Birth Residence) (see Table 0190). In general, the Immunization Registry will only return the address it considers primary. However, if birth residence information (Birth State, Birth County, Birth Country) is present in the Immunization Registry, a BR address type will additionally be provided in this repeating field.
Patient Number - Home	13	RE		Y		00116	40	XTN	• This field contains the patient's phone numbers, and, possibly, e-mail address. The Immunization Registry recognizes telecommunication use codes in component 2 (see Table 0201), but ignores use codes other than "PRN", "WPN", and "NET". If "PRN" or "WPN" is specified, the Immunization Registry will use the first component, giving a 10-digit number for the area code and phone number combined. • If component 2 is "NET", the e-mail

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									address will be provided in component 4. • The Immunization Registry supports repetition of this field.
Ethnic Group	22	RE		Y	0189	00125	80	CE	• This field can be used to further define the patient's ancestry as Hispanic (see Table 0189). • The Immunization Registry does not support repetition of this field.
Multiple Birth Indicator	24	RE			0136	00127	1	ID	• This field indicates whether the patient was part of a multiple birth (see Table 0136). A "Y" will indicate that the patient was part of a multiple birth; otherwise this field will be empty.
Birth Order	25	RE				00128	2	NM	• This field is relevant when client was born in a multiple birth. Use 1 for the first born, 2 for the second, etc. This field is useful in matching client data to existing records.
PD1 Segment									
Immunization Registry Status	16	R			0441	01569	1	IS	The Immunization Registry will only return immunizations related to active records/patients, as result the only code to be returned will be A: Active
Immunization Registry Status Effective Date	17	RE				01570	8	DT	Effective date (the date the first shot within the individual's Immunization Registry record was given)
NK1 Segment		For all fields in this segment, the Immunization Registry will return the patient's Mother data if available. Otherwise, the Immunization Registry will return data associated with the person designated as the patient's Primary Responsible Party.							
Set ID - NK1	1	R	R			00190	4	SI	• This field contains a number that identifies the occurrence of this NK1 segment within its association with the PID segment. Using the NK1-1 Set ID, multiple NK1 segments can be

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									associated with one PID segment. "1" as represents the first occurrence of the NK1, all other occurrence will not be used by the Immunization Registry.
Name	2	R		Y		00191	48	XPN	• This field contains the name of the next of kin or associated party.
Relationship	3	R			0063	00192	60	CE	• This field defines the relationship between the patient and the name of the next of kin or associated party (see Table 0063). Use only the first three components of the CE data type, for example: |MTH^Mother^HL70063|. The Immunization Registry does not support repetition of this field.
Address	4	RE		Y		00193	106	XAD	• See the XAD data type. • The Immunization Registry does not support repetition of this field.
Phone Number	5	RE		Y		00194	40	XTN	• This field contains the patient's phone numbers, and, possibly, e-mail address. The Immunization Registry recognizes telecommunication use codes in component 2 (see Table 0201), but ignores use codes other than "PRN", "WPN", and "NET". If "PRN" or "WPN" is specified, the Immunization Registry will use the first component, expecting a 10-digit number for the area code and phone number combined. • If component 2 is "NET", the e-mail address must be provided in component 4. • The Immunization Registry supports

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									repetition of this field.
Date of Birth	16					00110	26	TS	• This field contains the next-of-kin's birth date. The Immunization Registry does not include the time component.
Next-of –Kin/ Associated Party's Identifiers	33	RE		Y		00751	32	CX	• This field contains identifiers for the next-of-kin/associated party. The Immunization Registry only supports SSN and Medicaid number (Same as Missouri's DCN).
PV1 Segment									
Patient Class	2	R	R		0004	00132	1	IS	• This field contains a code indicating a patient's class or category. It is required by HL7, although it does not have a consistent industry-wide definition. This component should be coded with an "R".
Financial Class	20	RE		Y	0064	00150	50	FC	• This field (**a repeating field**) contains the financial class assigned to the patient and the associated effective date, and is used to identify sources of reimbursement. The Immunization Registry supports the repetition of this field for each immunization being sent with corresponding dates (see field RXA-3). • *The Immunization Registry will accept valid VFC Eligibility codes in this field. The current list of valid values are:* *o V00 - VFC Eligibility not determined/unknown* *o V01 - Not VFC Eligible* *o V02 - VFC Eligible - Medicaid* *o V03 - VFC Eligible - Uninsured* *o V04 - VFC Eligible - American*

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									Indian/Alaskan Native *o V05 - VFC Eligible - Underinsured* *o V06 - VFC Eligible - MO-specific eligibility* *o V07 - VFC Eligible - Local-specific eligibility*
PV2 Segment									*Per the Recommendation of the CDC's Implementation Guide, this optional segment will be ignored if it is included in VXR messages sent to the Immunization Registry.*
IN1 Segment									*Per the Recommendation of the CDC's Implementation Guide, this optional segment will be ignored if it is included in VXR messages sent to the Immunization Registry.*
IN2 Segment									*Per the Recommendation of the CDC's Implementation Guide, this optional segment will be ignored if it is included in VXR messages sent to the Immunization Registry.*
IN3 Segment									*Per the Recommendation of the CDC's Implementation Guide, this optional segment will be ignored if it is included in VXR messages sent to the Immunization Registry.*
ORC Segment									*Per the Recommendation of the CDC's Implementation Guide, this optional segment will be ignored if it is included in VXR messages sent to the Immunization Registry.*
RXA Segment									

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Give Sub-ID Counter	1	R	R			00342	4	NM	• The NIP's guidelines recommend that this field's value should always be zero (0).
Administration Sub-ID Counter	2	R	R			00344	4	NM	• The Immunization Registry will always put a value of "999" in this field to indicate dose numbers are not being included in the vaccine information.
Date/Time Start of Administration	3	R	R			00345	26	TS	• **(Service Date).** Contains the date the vaccine was administered. T**his field will be the same as RXA- 4.** The Immunization Registry does not include the time component.
Date/Time End Of Administration	4	R				00346	26	TS	Contains the date the vaccine was administered. **This field will be the same as RXA-3.** The Immunization Registry does not include the time component.
Administered Code	5	R				00347	100	CE	• This field identifies the vaccine administered. The Immunization Registry includes the CVX code, CPT code, or both for the vaccine administered. When a CVX code is provided, the CVX code will be in the first component and the literal "CVX" in the third component. • The CPT code uses components four through six. For example, give the CPT code in the fourth component and "C4" in the sixth component, |^^^90700^DtaP^C4|. • Missouri will return CVX and CPT when available.
Administered Amount	6	R	R			00348	20	NM	• The Immunization Registry does not collect Administered Amount, and places a value of "999" in this field.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Administration Notes	9	RE		Y		00351	200	CE	• The Immunization Registry is following the NIP's guidelines by using this field to indicate whether the immunization being reported was administered (new) or came from other records (historical).
Administering Provider	10	RE		Y		00352	200	XCN	• The HL7 standard states that this field is used to identify the provider who ordered the immunization, the person physically administering the vaccine (the "vaccinator") or the person who recorded the immunization (the "recorder").
Administering At Location	11	RE				00353	200	CM	• The field will contain the name and address of the facility where the immunization was administered.
Administer Per (time unit)	12	RE/C	C			00354	20	ST	• The Immunization Registry does not populate this field.
Substance Lot Number	15	RE		Y		01129	20	ST	• This field contains the manufacturer's lot number for the vaccine administered. • The Immunization Registry does not support repetition of this field.
Substance Expiration Date	16	RE		Y		01130	26	TS	• The Immunization Registry does not populate this field.
Substance Manufacturer Name	17	RE		Y	0227	01131	60	CE	• Contains the manufacturer of the vaccine administered (see Table 0227).
Action Code-RXA	21	RE			0323	01224	2	ID	Immunization Registry will not provide a value.
RXR Segment (Optional segment)									
Route	1	R	R		0162	00309	60	CE	• The Immunization Registry will include the route used to administer the vaccination.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Site	2	RE		0163		00310	60	CE	• The Immunization Registry will include the site where the vaccination was administered.
OBX Segment									
Set ID - OBX	1	RE				00569	4	SI	• Will contain a "1" for the first OBX within the message, "2" for the second and so forth.
Value Type	2	RE/C	C			00570	3	ID	• Use CE for the Immunization Registry.
Observation Identifier	3	R	R			00571	80	CE	• Indicates a Vaccination Contraindication/Precaution, • Will be codes as 30945-0 or null.
Observation Sub-ID	4		C			00572	20	ST	• Will be empty from the Immunization Registry.
Observation Value	5	RE	C	Y		00573	65536	CE	• The Immunization Registry has imposed a CE data type upon this field.
Observ Result Status	11	R	R		0085	00579	1	ID	• The field is required for HL7. Use "F" for the Immunization Registry.
Date/Time of the Observation	14	RE				00582	26	TS	• This field records the date of the observation (YYYYMMDD), if available
NTE Segment (this segment is not used at this time by the Immunization Registry)									

Exhibit 7: Reference Information for VXR Message

VXU - Unsolicited Vaccination Record Update (VXU)

The VXU message is used by a provider to submit a vaccination they have administered within their clinic. Each VXU is to include only the current vaccination and not vaccinations from previous visits. As mentioned previously, the message should be formatted as specified in the referenced documentation. Exhibit 8 contains notes for various fields as they pertain to the Immunization Registry.

Given the definition of the VXU message, it is possible to construct a properly formatted message that contains information regarding a patient, but does not include any vaccines having been administered. If the Immunization Registry receives this type of message, one of two scenarios will apply:

- If the patient already exists in the Immunization Registry, the demographic information in the VXU message will be used to update the Immunization Registry.
- If the patient does not exist in the Immunization Registry, the message will be ignored. (At this time, there does not appear to be any value in creating a patient in the Immunization Registry via the VXU message if no vaccinations can be associated to them.)

When a matching patient record is found, the Immunization Registry will then review the data included in the VXU message.

- Patient demographic data in the message (including name, date of birth, etc.) may be used to update the relevant fields in the Immunization Registry. One caveat to this is that the patient's date of birth will not be updated in the Immunization Registry if the record was received from the Vital Statistics system. For these records, the Vital Statistics system is considered the source of this data, and any changes to the patient date of birth field for these records needs to originate in the Vital Statistics system.
- If the vaccination in the message already exists in the Immunization Registry, the Immunization Registry will update the applicable fields with the data supplied in the VXU message.
- If the vaccination does not exist, the Immunization Registry will add the vaccination to the patient's record.
- If the vaccination has an administration date before the patient's date of birth, the vaccination will not be added to the Immunization Registry.
- If the Immunization Registry already has another vaccination on the same date within the same vaccine group, the incoming vaccination will not be added to the Immunization Registry.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
MSH Segment									
Field Separator	1	R	R			00001	1	ST	• The Immunization Registry expects that incoming messages will use the pipe character ("|") as the field separator for all messages.
Encoding Characters	2	R	R			00002	4	ST	• The Immunization Registry expects that incoming messages will contain the recommended value of "^~\&" in this field.
Sending Application	3	R				00003	180	HD	• This field (component 1) identifies the sending application among all other applications within the sender's network enterprise. The network enterprise consists of all the applications that participate in the exchange of HL7 messages within the enterprise. Immunization providers may use this field to identify their software name and version.
Sending Facility	4	R				00004	180	HD	• This field uses a name, identifier, and identifier type to identify the facility where the data contained in this individual message originated (i.e., the "owner" of the message information). • The required identifier is a provider ID (component 2) issued by the Missouri Department of Health and Senior Services using "MOCLIENTID" as the identifier type (component 3). • **The provider is to contact DHSS - Bureau of Immunization Assessment and Assurance (BIAA) to obtain their assigned facility identifiers**. • **Important –** a different Sending Facility identifier must be transmitted for each sub-organization for which the provider wishes to

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									uniquely identify or segregate immunizations. • The Immunization Registry will include the ID provided here in the "Receiving Facility" field of the MSH segment of the response message. • If an invalid ID is included, the Immunization Registry will not process the message.
Receiving Application	5	R				00005	180	HD	• Uniquely identifies the receiving application among all other applications within the receiver's network enterprise. "SHOWMEVAX" will be used in component 1 for immunizations updates being sent to the State of Missouri immunization registry.
Receiving Facility	6	R				00006	180	HD	• This field identifies the receiving facility. "MODHSS" will be used in component 1 for immunization updates being sent to the State of Missouri immunization registry.
Date/Time of Message	7	R				00007	26	TS	• Date/time the sending system created the message. The typical HL7 Time stamp (TS) data type is defined to be in the format: YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]] [+/-ZZZZ]^<degree of precision> **<u>The Immunization Registry requires precision only to the second.</u>**
Message Type	9	R	R		0076 0003	00009	7	CM	• The Immunization Registry expects this to always be "VXU^V04" for this type of message.
Message Control ID	10	R	R			00010	20	ST	• Should be a unique ID (within each system sending messages to the Immunization Registry) and is generated by the system sending the message.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									• The Immunization Registry will archive this in its message log.
Processing ID	11	R	R		0103	00011	3	PT	• The Immunization Registry will use this value to indicate which of its technical environments (e.g., Test, Validation or Production) that generated the message. Valid values are represented in table "HL70103". In addition, Missouri includes "V" to represent its provider validation environment.
Version ID	12	R	R		0104	0012	60	VID	• The Immunization Registry expects all messages to use version 2.3.1.
PID Segment									
Patient Identifier List	3	R	R	Y	0203 (ID Types)	00106	20	CX	• Contains one or more identifiers used to uniquely identify the patient (e.g. medical record number, patient identifier, Medicaid number (Same as Missouri's DCN), SSN, etc.). Sub-components 1 (ID) and 5 (identifier type code) are required in the PID-3 field. The Immunization Registry will only process the following field identifier types: o PI (Patient Internal Identifier – Provider's Id for the individual) o SR (State Registry (Missouri) ID) o SS (Social Security Number) o MA (Medicaid Number) • All other identifier types in this field will be ignored. • This field can be repeated.
Patient Name	5	R	R			00108	48	XPN	• This field contains the legal name of the patient. See the XPN data type. The patient's last and first names are required in the first two components, respectively. If the name type code component is included, it should be

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									valued "L" for Legal (see Table 0200). • Note: The Immunization Registry cannot match patients with placeholder first names such as Infant, Baby, Girl, Boy, etc. The Immunization Registry does **not** support repetition of this field. Occurrences other than the first will be ignored.
Mother's Maiden Name	6	RE				00109	48	XPN	• Contains the family name under which the mother was born (i.e., before marriage). See the XPN data type. If the name type code component is included, it should be valued "M" for Maiden Name (see Table 0200). The Immunization Registry will only use the family name component from this field, extracting the mother's first name from the NK1 segment. The Immunization Registry does **not** support repetition of this field. Occurrences other than the first will be ignored. • Note: The Immunization Registry encourages the inclusion of this field to help distinguish between patients with the same names and dates of birth. • **Internal Database Update Logic**. If this field is non-blank and the corresponding field in the Immunization Registry is blank, then this field will be added (moved) to this field in the database. Otherwise, if this field is non-blank and the corresponding Immunization Registry field is non-blank, then the database is not updated with this field.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Date/Time of Birth	7	R				00110	26	TS	• This field contains the patient's year, month and day of birth in the format YYYYMMDD. The Immunization Registry ignores any time component. • **Internal Database Update Logic**. If this field is non-blank and the corresponding field in the Immunization Registry is blank, then this field will be added (moved) to this field in the database. Otherwise, if this field is non-blank and the corresponding Immunization Registry field is non-blank, then the database is not updated with this field.
Sex	8	R			0001	00111	1	IS	• Use 'F', 'M', or 'U' • **Internal Database Update Logic**. If this field is non-blank and the corresponding field in the Immunization Registry is blank, then this field will be added (moved) to this field in the database. Otherwise, if this field is non-blank and the corresponding Immunization Registry field is non-blank, then the database is not updated with this field.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Patient Alias	9	RE		Y			48	XPN	• The Immunization Registry expects the Name Type component to be "A" if any value is entered in this field. • The Immunization Registry will ignore any value associated with other name type. • **Note**: Name values will be parsed by the Immunization Registry to ensure a standardized format prior to searching for or updating a record. This may result in slight variations of names submitted versus names returned. • **Internal Database Update Logic**. If this field is non-blank, and is not the same as an existing alias name for the patient, then add it as a new alias name to the Immunization Registry.
Patient Race	10	RE		Y	0005	00112	80	CE	• Contains a code indicating the patient's race (see Table 0005). If it is necessary to further define the patient's ancestry as Hispanic, use field PID-22-Ethnicity Group. • The Immunization Registry supports repetition of this field. • **Internal Database Update Logic**. If this field is non-blank and the corresponding field in the Immunization Registry is blank, then this field will be added (moved) to this field in the database. Otherwise, if this field is non-blank and the corresponding Immunization Registry field is non-blank, then the database is not updated with this field.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Patient Address	11	RE		Y	0190 0212	00114	106	XAD	• The Immunization Registry will only retain an address type of "H" (Home), "P" (Permanent), "M" (Mailing), or "BR" (Birth Residence) (see Table 0190). If the address type is omitted, "H" is assumed. Other address types will be ignored. If address type "BR" is the only type provided for a new patient, the Immunization Registry will treat it as though it were "H". • The Immunization Registry recommends use of the USPS format for recording street address, other designation (e.g. "Apt 312"), city, state and zip. See Table 0212 for the three-character country code, if not "US". • The Immunization Registry will ignore the county code. • If an address type of "BR" is specified, the Immunization Registry will retain only the birth state and country from this repetition. If the ISO 3166 Country Code is not known, simply send the name of the country as free text. • **Internal Database Update Logic.** If this field is non-blank and the Immunization Registry patient address is absent, then add this address as the patient's primary address. If this field is non-blank and the Immunization Registry patient address already exists, then add this address as a non-primary address.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Patient Number - Home	13	RE		Y	0201	00116	40	XTN	• This field contains the patient's phone numbers, and, possibly, e-mail address. The Immunization Registry recognizes telecommunication use codes in component 2 (see Table 0201), but ignores use codes other than "PRN", "WPN", and "NET". If "PRN" or "WPN" is specified, the Immunization Registry will use the first component, expecting a 10-digit number for the area code and phone number combined. If component 2 is missing, the Immunization Registry will assume a value of "PRN" • If component 2 is "NET", the e-mail address must be provided in component 4. • The Immunization Registry supports repetition of this field. • **Internal Database Update Logic**. If this field is non-blank and the corresponding field in the Immunization Registry is blank, then this field will be added (moved) to this field in the database. Otherwise, if this field is non-blank and the corresponding Immunization Registry field is non-blank, then the database is not updated with this field.
Ethnic Group	22	RE			0189	00125	80	CE	• This field can be used to further define the patient's ancestry as Hispanic (see Table 0189). • The Immunization Registry does **not** support repetition of this field. Occurrences other than the first will be ignored. • **Internal Database Update Logic**. If this field is non-blank and the corresponding field in the Immunization Registry is blank, then this field will be added (moved) to this field

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									in the database. Otherwise, if this field is non-blank and the corresponding Immunization Registry field is non-blank, then the database is not updated with this field.
Multiple Birth Indicator	24	RE			0136	00127	1	ID	• This field indicates whether the patient was part of a multiple birth (see Table 0136). Use "Y" to indicate that the patient was part of a multiple birth; otherwise this field can be omitted. • **Internal Database Update Logic**. If this field is non-blank and the corresponding field in the Immunization Registry is blank, then this field will be added (moved) to this field in the database. Otherwise, if this field is non-blank and the corresponding Immunization Registry field is non-blank, then the database is not updated with this field.
Birth Order	25	RE				00128	2	NM	• This field is relevant when client was born in a multiple birth. Use 1 for the first born, 2 for the second, etc. This field is useful in matching client data to existing records. • **Internal Database Update Logic**. If this field is non-blank and the corresponding field in the Immunization Registry is blank, then this field will be added (moved) to this field in the database. Otherwise, if this field is non-blank and the corresponding Immunization Registry field is non-blank, then the database is not updated with this field.
PD1 Segment									

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Protection Indicator	12				0136		1	ID	Values may be as specified in Table 0136. If the value provided is "N", an error will be generated. The Immunization Registry will not load records that cannot be shared.
Immunization Registry Status	16	R			0441	01569	1	IS	The Immunization Registry will only return immunizations related to active records/patients, as result the only code to be returned will be A: Active
Immunization Registry Status Effective Date	17	RE				01570	8	DT	Effective date (the date the first shot within the individual's Immunization Registry record was given)
NK1 Segment (optional segment)									
Set ID - NK1	1	R	R			00190	4	SI	This field contains a number that identifies the occurrence of this NK1 segment within its association with the PID segment. Using the NK1-1 Set ID, multiple NK1 segments can be associated with one PID segment. Use "1" as the Set ID for the first occurrence of the NK1 segment within the message, "2" for the second, and so forth.
Name	2	R				00191	48	XPN	• This field contains the name of the next of kin individual responsible for the patient (sometimes this is the patient's next-of-kin or some other associated party. • The Immunization Registry does **not** support repetition of this field. Occurrences other than the first will be ignored. • **Note:** The mother's maiden name should be reported in PID-6, never in NK1-2.
Relationship	3	R			0063	00192	60	CE	• This field defines the relationship between the patient and the name of the responsible party

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									(see Table 0063). Use only the first three components of the CE data type, for example: |MTH^Mother^HL70063|. The Immunization Registry does not support repetition of this field.
Address	4	RE		Y		00193	106	XAD	• Same processing rules apply to this field as Patient Address (PID-11). Although, this field repeats, the Immunization Registry will only process the first occurrence.
Phone Number	5	RE		Y		00194	40	XTN	• Same processing rules as Patient Number – Home (PID-13).
Date of Birth	16	RE				00110	26	TS	• Next of kin's date of birth – improves the ability to identify matching record or to add a new record in the Immunization Registry. • This field contains the patient's year, month and day of birth in the format YYYYMMDD. The Immunization Registry ignores any time component.
Next of Kin/Associated Party's Identifiers	33	RE		Y		00751	32	CX	• This field contains identifiers for the next of kin/associated party. The Immunization Registry supports SSN and Medicaid number (Same as Missouri's DCN**)**. This field, not NK1-37 - Contact Person SSN, should be used to record all identifiers, including SSN. The SSN is not displayed in the Immunization Registry and is only used for patient security (see PD1-12).
PV1 Segment									
Patient Class	2	R	R		0004	00132	1	IS	• This field contains a code indicating a patient's class or category. It is required by HL7, although it does not have a consistent

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									industry-wide definition. This component should be coded with an "R".
Financial Class	20	RE		Y	0064	00150	50	FC	• This field (**a repeating field**) contains the financial class assigned to the patient and the associated effective date, and is used to identify sources of reimbursement. The Immunization Registry supports the repetition of this field for each immunization being sent with corresponding dates (see field RXA-3). • *The Immunization Registry will accept valid VFC Eligibility codes in this field. The current list of valid values are:* *o V00 - VFC Eligibility not determined/unknown* *o V01 - Not VFC Eligible* *o V02 - VFC Eligible - Medicaid* *o V03 - VFC Eligible - Uninsured* *o V04 - VFC Eligible - American Indian/Alaskan Native* *o V05 - VFC Eligible - Underinsured* *o V06 - VFC Eligible - MO-specific eligibility* *o V07 - VFC Eligible - Local-specific eligibility* • The Immunization Registry will also accept other codes as described in Table 0064.
PV2 Segment									*Per the Recommendation of the CDC's Implementation Guide, this optional segment will be ignored if it is included in VXU messages sent to the Immunization Registry.*
IN1 Segment									*Per the Recommendation of the CDC's Implementation Guide, this optional segment will be ignored if it is included in VXU messages sent to the Immunization Registry.*

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
IN2 Segment									*Per the Recommendation of the CDC's Implementation Guide, this optional segment will be ignored if it is included in VXU messages sent to the Immunization Registry.*
IN3 Segment									*Per the Recommendation of the CDC's Implementation Guide, this optional segment will be ignored if it is included in VXU messages sent to the Immunization Registry.*
ORC Segment									*Per the Recommendation of the CDC's Implementation Guide, this optional segment will be ignored if it is included in VXU messages sent to the Immunization Registry.*
RXA Segment									
Give Sub-ID Counter	1	R	R			00342	4	NM	The Immunization Registry expects this value to always be "0". The Immunization Registry will ignore any other value in this field.
Administration Sub-ID Counter	2	R	R			00344	4	NM	For the Immunization Registry this field will always be "999".
Date/Time Start Of Administration	3	R	R			00345	26	TS	Contains the date the vaccine was administered. The Immunization Registry ignores any time component.
Date/Time End of Administration	4	R	R			00346	26	TS	Contains the date the vaccine was administered. The Immunization Registry ignores any time component.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Administered Code	5	R	R		0292	00347	100	CE	This field identifies the vaccine administered. The Immunization Registry accepts the CVX code or the CPT code for the vaccine administered. If using the CVX code, give the CVX code in the first component and "CVX" in the third component. If using the CPT code, use components four through six. For example, give the CPT code in the fourth component and "C4" in the sixth component, |^^^90700^DtaP^C4|. Examples: Submitting only the CVX code: |20^DTaP^CVX| Submitting only the CPT code: |^^^90700^DTaP^C4| Submitting CVX and CPT codes: |20^DTaP^CVX^90700^DTaP^C4|
Administered Amount	6	R	R			00348	20	NM	The Immunization Registry does not collect Administered Amount, and expects a value of "999" in this field.
Administration Notes	9	R		Y	NIP 001	00351	200	CE	• The Immunization Registry is following the NIP's guidelines by using this field to indicate whether the immunization being reported was administered (new) or came from other records (historical). The submitter should assign the value "00" to the identifier component of this field to indicate that the immunization is new. See Table NIP001. Examples: New immunization: |00^New Immunization Record^NIP001| Historical immunization: |01^Historical Information^NIP001| (source unspecified)

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									|07^Historical Information^NIP001|(from school record)
Administering Provider	10	RE		Y		00352	200	XCN	• The HL7 standard states that this field is used to identify the provider who ordered the immunization, the person physically administering the vaccine (the "vaccinator") or the person who recorded the immunization (the "recorder"). However, the Immunization Registry is only interested in identifying and storing the "vaccinator", and only when the immunization is specified as "new" in RXA-9. For each "new" immunization, submitters should include their unique identifier for the "vaccinator" in component 1 of this field (the ID number) and the vaccinator's name in components 2 through 7 (the person name). In addition, the submitter should specify VEI - for vaccinator employee number; as the identifier type code in component 13 to indicate the person being described is the "vaccinator". The Immunization Registry will store the "vaccinator" information with the immunization.
Administered-At Location	11	RE				00353	200	CM	• Is to contain the name and address of the facility where the immunization was administered. Submitters should specify the facility name in component 4 of this field, and the address in components 9 through 14. The Immunization Registry uses the USPS format for recording street address, other designation (e.g. "Suite 325"), city, state and zip.
Administer Per (time unit)	12	RE/C	C			00354	20	ST	• The Immunization Registry ignores this field.
Substance Lot Number	15	RE				01129	20	ST	• This field contains the manufacturer's lot number for the vaccine administered.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									• The Immunization Registry does **not** support repetition of this field. Occurrences other than the first will be ignored.
Substance Expiration Date	16	RE				01130	26	TS	• The Immunization Registry ignores this field.
Substance Manufacturer Name	17	RE			0227	01131	60	CE	• Contains the manufacturer of the vaccine administered (see Table 0227). HL7 specification recommends use of the external MVX code, and as a result, the Immunization Registry requires that the coding system component of the CE field be valued as "MVX" (see Table 0396). • The Immunization Registry does **not** support repetition of this field. Occurrences other than the first will be ignored. • RXA-17 example: |AB^Abbott Laboratories^MVX|
Substance Refusal Reason	18	RE			NIP 002		200	CE	• If applicable, contains the reason the patient refused the medical substance. • The Immunization Registry does **not** support repetition of this field. Occurrences other than the first will be ignored.
Action Code-RXA	21	RE			0323	01224	2	ID	• This field will be ignored by the Immunization Registry.
RXR Segment (Optional segment)									
Route	1	R	R		0162	00309	60	CE	• This field is the route of administration. • The Immunization Registry will ignore any data in this field that is not a valid route (See Table HL7-0162).
Site	2	RE			0163	00310	60	CE	• This field is the site of the route of administration. • The Immunization Registry will ignore any data in this field that is not a valid site.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
OBX Segment (Optional segment)									
Set ID - OBX	1	RE				00569	4	SI	• The Immunization Registry expects systems submitting VXU messages to use the standard numbering approach defined in the CDC Immunization Implementation Guide.
Value Type	2	R	C			00570	3	ID	• The Immunization Registry expects this field to have the value "CE". Otherwise, the OBX segment will be ignored.
Observation Identifier	3	R	R			00571	80	CE	• The Immunization Registry will accept any valid value for this field, however, only the messages that contain the following LOINC code will be processed: 30945-0^Vaccination contradiction ^LN • OBX segments with any other LOINC code values will be ignored.
Observation Sub-ID	4		C			00572	20	ST	• The Immunization Registry will ignore any value supplied in this field.
Observation Value	5	R	C			00573	65536	CE	• The Immunization Registry requires the data type to be "CE". • Valid values for this field that are associated with OBX-3 are contained in the NIP-004 Table.
Observ Result Status	11	R	R		0085	00579	1	ID	• The Immunization Registry expects this field to always have a value of "F". • The Immunization Registry will ignore any other value and continue processing the message as if an "F" had been received.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Date/Time of the Observation	14	RE				00582	26	TS	• Must provide this field if available. • The Immunization Registry ignores any time component.
NTE Segment (not processed by the Immunization Registry)									

Exhibit 8: Reference Information for VXU Message

ACK - Acknowledgement Message

ACK messages will not be generated related to the submission of a VXQ.

An ACK message will be generated to acknowledge the receipt of non-batch submitted VXUs. ACKs so generated will not indicate whether the message has any errors, merely that the VXU was received. ACK messages will not be generated for VXU messages received in batch.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
MSH Segment									
Field Separator	1	R	R			00001	1	ST	• The Immunization Registry will always use the pipe character ("|") as the field separator for all HL7 messages.
Encoding Characters	2	R	R			00002	4	ST	• The Immunization Registry will always put a value of "^~\&" in this field.
Sending Application	3	R				00003	180	HD	• This field identifies the sending application among all other applications within the sender's network enterprise. The network enterprise consists of all the applications that participate in the exchange of HL7 messages within the enterprise. Immunization providers may use this field to identify their software name and version. • "SHOWMEVAX" will be used in component 1 for immunization responses being sent from the State of Missouri immunization registry.
Sending Facility	4	R				00004	180	HD	• This field uses a name, identifier, and identifier type to identify the facility where the data contained in this individual message originated (i.e., the "owner" of the message information). • "MODHSS" will be used in component 1 for immunization responses being sent from the State of Missouri immunization registry.
Receiving Application	5	R				00005	180	HD	• This is the same value that was in the Sending Application on the corresponding VXU.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Receiving Facility	6	R				00006	180	HD	• This is the same value that was in the Sending Facility on the corresponding VXQ.
Date/Time of Message	7	R				00007	26	TS	• Date/time the sending system created the message. The typical HL7 Time stamp (TS) data type is defined to be in the format: YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision> **The Immunization Registry will provide precision only to the second.**
Message Type	9	R	R		HL7-0076 HL7-0003	00009	7	CM	• The receiving system uses this field to know the data segments to recognize and, possibly, the application to which to route this message. Within HL7, the triggering event is considered to be the real-world circumstance causing the message to be sent. The second component is not required on acknowledgment messages. The third component is not required for immunization registries, since in the VXQ, VXR, VXX, and VXU messages; the structure is the same designation as the trigger event type shown in component two. • The specific components of fields using the CM data type are defined within the field descriptions: The components for this field are: <message type (ID)>^<trigger event (ID)>^<message structure (ID)> • Refer to HL7 Table 0076 - Message type, HL7 Table 0003 - Event type, and HL7 Table 0354 - Message structure for values.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									• The unsolicited transmission of a vaccination record update message would appear as: |VXU^V04|. • The unsolicited transmission of an observation message, such as a VAERS report, would appear as: |ORU^R01|. • In acknowledgement messages, the value "ACK" is sufficient and the second component may be omitted. |ACK|
Message Control ID	10	R	R			00010	20	ST	• This field uniquely identifies the message. The receiving system echoes this ID back to the sending system in the message acknowledgment segment (MSA). Many facilities simply use a Date/Time stamp plus a sequentially assigned number. For example: The Immunization Registry could use "YYYYMMDDMO999999" in this field. The value can be interpreted as: – YYYYMMDD = current system date when query was executed – MO = 2 character abbreviation for Missouri – 999999 = sequential number indicating the number of HL7 messages sent from the Immunization Registry on the indicated date.
Processing ID	11	R	R			00011	3	PT	• Used to indicate how to process the message as defined in HL7 processing rules. See Table 0103 for valid values.
Version ID	12	R	R		HL7-0104	0012	60	VID	• Matched by the receiving system to its own HL7 version to be sure the message will be interpreted correctly. Use a value of "2.3.1" to indicate HL7 Version 2.3.1.
MSA Segment (this segment will not be generated by the Immunization Registry)									

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
ERR Segment (this segment will not be generated by the Immunization Registry)									

Exhibit 10: Reference Information for ACK Message

QCK - Query General Acknowledgement Message

The QCK message is a specialized instance of the ACK message that is only used when the Immunization Registry has received and successfully processed a VXQ message but does not find any matching records (or finds more than 10). Exhibit 11 contains notes for various fields as they pertain to the Immunization Registry.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
MSH Segment									
Field Separator	1	R	R			00001	1	ST	• The Immunization Registry will always use the pipe character ("|") as the field separator for all HL7 messages.
Encoding Characters	2	R	R			00002	4	ST	• The Immunization Registry will always put a value of "^~\&" in this field.
Sending Application	3	R				00003	180	HD	• This field identifies the sending application among all other applications within the sender's network enterprise. The network enterprise consists of all the applications that participate in the exchange of HL7 messages within the enterprise. Immunization providers may use this field to identify their software name and version. • "SHOWMEVAX" will be used in component 1 for immunization responses being sent from the State of Missouri immunization registry.
Sending Facility	4	R				00004	180	HD	• This field uses a name, identifier, and identifier type to identify the facility where the data contained in this individual message originated (i.e., the "owner" of the message information). • "MODHSS" will be used in component 1 for immunization responses being sent from the State of Missouri immunization registry.
Receiving Application	5	R				00005	180	HD	• This is the same value that was in the Sending Application on the corresponding VXQ.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
Receiving Facility	6	R				00006	180	HD	• This is the same value that was in the Sending Facility on the corresponding VXQ.
Date/Time of Message	7	R				00007	26	TS	• Date/time the sending system created the message. The typical HL7 Time stamp (TS) data type is defined to be in the format: YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]] [+/-ZZZZ]^<degree of precision> **<u>The Immunization Registry will provide precision only to the second.</u>**
Message Type	9	R	R		0076 0003	00009	7	CM	• The receiving system uses this field to know the data segments to recognize and, possibly, the application to which to route this message. Within HL7, the triggering event is considered to be the real-world circumstance causing the message to be sent. The second component is not required on acknowledgment messages. The third component is not required for immunization registries, since in the VXQ, VXR, VXX, and VXU messages; the message structure is the same designation as the trigger event type shown in component two. • The specific components of fields using the CM data type are defined within the field descriptions: The components for this field are: <message type (ID)>^<trigger event (ID)>^<message structure (ID)> • Refer to HL7 Table 0076 - Message type, HL7 Table 0003 - Event type, and HL7 Table 0354 - Message structure for values.

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									• The unsolicited transmission of a vaccination record update message would appear as: |VXU^V04|. • The unsolicited transmission of an observation message, such as a VAERS report, would appear as: |ORU^R01|. • In acknowledgement messages, the value "ACK" is sufficient and the second component may be omitted. |ACK|
Message Control ID	10	R	R			00010	20	ST	• This field uniquely identifies the message. The receiving system echoes this ID back to the sending system in the message acknowledgment segment (MSA). Many facilities simply use a Date/Time stamp plus a sequentially assigned number. For example: The Immunization Registry could use "YYYYMMDDMO999999" in this field. The value can be interpreted as: – YYYYMMDD = current system date when query was executed – MO = 2 character abbreviation for Missouri – 999999 = sequential number indicating the number of HL7 messages sent from the Immunization Registry on the indicated date.
Processing ID	11	R	R			00011	3	PT	• Used to indicate how to process the message as defined in HL7 processing rules. See Table 0103 for valid values.
Version ID	12	R	R		0104	0012	60	VID	• Matched by the receiving system to its own HL7 version to be sure the message will be interpreted correctly. Use a value of "2.3.1"

FIELD NAME	FLD #	MO RQ'D	CDC RQ'D	Re-peats	Table	Item	Len	DT	NOTES
									to indicate HL7 Version 2.3.1.
MSA Segment									
Acknowledgment Code	1	R	R		0008	00018	2	ID	• The Immunization Registry will always respond using the original acknowledgement mode. • The Immunization Registry will only respond with a QCK message when the message was processed without error but no matching records were found. Therefore, the only value that will be used here is "AA".
Message Control ID	2	R	R			00010	20	ST	• The Immunization Registry will always put the value of the "Message Control ID" field in the MSH segment of the corresponding VXQ message in this field.
ERR Segment									
Error Code and Location	1	R	R	Y	0357	00024	80	CM	• The Immunization Registry will include the relevant segment, sequence and field position of the error, along with the applicable indicator from table "HL70357" for the error encountered while processing the message.
QAK Segment(this segment will not be generated by the Immunization Registry)									

Exhibit 11: Reference Information for QCK Message

MESSAGE PROCESSING DESIGN

Excluded from the abbreviated version of this document.

APPENDICES

Appendix A - Glossary
Appendix B - References
Appendix C - Code Tables
Appendix D - Data Types used in this Implementation Guide
Appendix E - Memorandum of Agreement
Appendix F – Sample VXU Segment Definitions
Appendix G – Duplicate Shot Processing

Term	Description
American Immunization Registry Association (AIRA)	AIRA is an organization established to advance the development and implementation of automated systems related to immunization records management, and as a result, an important mechanism to assist in the prevention and control of vaccines that help minimize the spread of diseases.
Bureau of Immunization Assessment and Assurance (BIAA)	BIAA is the Missouri agency responsible for managing immunization related initiatives as well as the State's immunization registry (Missouri Immunization Registry).
Component	A component is one of a logical grouping of items that comprise the contents of a coded or composite field. Within a field having several components, not all components are required to be valued.
Data type	A data type restricts the contents and format of the data field. Data types are given a 2- or 3-letter code. Some data types are coded or composite types with several components. The applicable data type is listed and defined in each field definition. Appendix D provides a complete listing of data types used in this document and their definitions.
Electronic Health Records	"The Electronic Health Record (EHR) is a longitudinal electronic record of patient health information generated by one or more encounters in any care delivery setting. Included in this information are patient demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data, and radiology reports. The EHR has the ability to generate a complete record of a clinical patient encounter, as well as supporting other care-related activities."
Empty Fields	The null value is transmitted as two double quote marks (""). A null-valued field differs from an empty field. An empty field should not overwrite previously entered data in the field, while the null value means that any previous value in this field should be overwritten.
Field	A field is a string of characters. Each field is identified by the segment it is in and its position within the segment; e.g., PID-5 is the fifth field of the PID segment. Optional data fields may be omitted. Whether a field is required, optional, or conditional in a segment

Term	Description
	is specified in the segment attribute tables. The designations are: R=Required, O=Optional, C=Conditional on the trigger event or on some other field(s). The field definition should define any conditionality for the field: X=Not used with this trigger event, B=Left in for backward compatibility with previous versions of HL7. A maximum length of the field is stated as normative information. Exceeding the listed length should not be considered an error.
Health Level 7 (HL7)	HL7 is a standardized messaging and text communications protocol for transmitting health related data between hospital systems, physician records management systems, electronic health records systems, public registries and practice management systems. HL7 is widely deployed in various applications to transmit preformatted, encoded health records between automated systems.
Immunization Registry	The Missouri Immunization Registry
IT Accessibility Standards	Missouri's set of standards that are complementary or comparable to ADA's Section 508 standards on automated system accessibility for individuals with disabilities.
Item Number	Each field is assigned a unique item number. Fields that are used in more than one segment will retain their unique item number across segments.
Message	A message is the entire unit of data transferred between systems in a single transmission. It is a series of segments in a defined sequence, with a message type and a trigger event.
Null Fields	See Empty Fields definition
Oracle	The Oracle Database is a relational database management system (RDBMS) that is used to manage and organize application data. Oracle is used by the Immunization Registry for storing of immunization records.
Rhapsody	Rhapsody Connect provides a common set of code for translating (decoding and coding) immunization HL7 messages.
Segment	A segment is a logical grouping of data fields. Segments within a defined message may be required or optional, may occur only once, or may be allowed to repeat. Each segment is named and is identified by a segment ID, a unique 3-character code.
ShowMeVax	ShowMeVax is an application for entering, maintaining, and displaying data from the Missouri Immunization Registry.
TCP/IP	TCP/IP is the acronym for Transmission

Term	Description
	Control Protocol/Internet Protocol. It a robust set of communications protocols used to connect computer across the Internet. It is the most common format for transmitting data over networks.
Vaccines for Children (VFC) Providers	VFC providers are healthcare organizations such as local public health agencies (LPHA), Federally Qualified Health Centers (FQHC), private pediatric and family clinics and private physicians who engage in administering a large number of immunizations annually to children.

Appendix B - References

1. MITRE - Center for Enterprise Modernization, Electronic Health Records Overview, McLean Virginia, 2006, p. 1.
2. Kansas Department of Health and Environment, Immunization Program, Kansas State Immunization Registry, HL-7 Interface Document, V1.4, July, 2008.
3. American Immunization Registry Association, Data Quality Assurance in Immunization Information Systems: Incoming Data, February 11, 2008. http://www.immregistries.org/pubs/mirow.phtml - AIRA-MIROW DQA best practices guide 02-11-2008.doc.
4. American Immunization Registry Association, Vaccination Level De-duplication in Immunization Information Systems, December 7, 2006. http://www.immregistries.org/pubs/mirow.phtml - AIRA best practices guide for vaccination de-duplication 12-07-06.doc.
5. Implementation Guide for Immunization Data Transactions using Version 2.3.1 of the Health Level Seven (HL7) Standard Protocol, Implementation Guide Version 2.2, June 2006
6. HL7 Immunization Message Validation (http://health.mo.gov/living/wellness/immunizations/pdf/immunization_registry_hl7_message_validation.pdf)
7. HL7 Immunization Implementation Guide and Design (http://health.mo.gov/living/wellness/immunizations/pdf/immunization_registry_hl7_implementation_guide.pdf)

Appendix C - Code Tables

The code tables used for processing HL7 messages are based on the CDC document at the following Web address:

http://www.cdc.gov/vaccines/programs/iis/stds/downloads/hl7guide.pdf

For customizations for the Immunization Registry, see this appendix in the comprehensive version of this guide.

Appendix D - Data Types used in this Implementation Guide

Excluded from the abbreviated version of this document.

Appendix E - Memorandum of Agreement

The MOA with Immunization Registry Provider document is available under separate cover.

Appendix F - Sample VXU Segment Definitions

Excluded from the abbreviated version of this document.

Appendix G - Duplicate Shot Processing

Excluded from the abbreviated version of this document.